

<CH>8. When the Construction of Meaning preceded the
Meaning of Construction: From Footpaths to Monumental
Entrances in Ancient Costa Rica

Payson Sheets

"In human societies, the control of energy constitutes the most fundamental and universally recognized measure of political power. The most basic way in which power can be symbolically reinforced is through the conspicuous consumption of energy. Monumental architecture, as a highly visible and enduring form of such consumption, plays an important role in shaping the political and economic behaviour of human beings. This explains why, as systems based on inequality evolved, monumental architecture loomed so large in the archaeological record." (Bruce Trigger 1990:128)

Research of the Arenal Research Project in northwestern Costa Rica has documented human occupation and human movement in the landscape during the past ten thousand years (Sheets and McKee 1994). Apparently, human movement across the landscape in PaleoIndian, Archaic, and early sedentary times was oriented to specific tasks at particular times, and involved much lower population

densities. That movement was therefore sufficiently randomized to have left no permanent record that we have detected.

However, a different form of movement began around 500 BC in the Arenal area, as people began burying their dead in cemeteries separated from their villages. Simultaneously they began following precise paths that connected villages with cemeteries, and cemeteries with the resources used in them for construction and for feasting. The "proper" cemetery-associated movement was single-file along the same path used by parental and earlier generations, resulting in compaction and erosion of the path itself. And it should be emphasized here that this is purely an erosional result, as we have never found any evidence of construction along any path. With time, concomitant erosion on either side of the path deepened it dramatically. Thus the sustained use of a straight path entering a cemetery had the unanticipated consequence of causing a sunken entryway. When people trod the same path on slopes over 10°, the channel formed by many footsteps began to erode. Generation after generation of path use resulted in entrenchment of the paths one, two, three, or more meters below the surrounding ground surface.

Paths often eroded two or more meters deep below the surrounding countryside, and in one case over seven meters deep. The ritual standard presumably developed that the preferred way to enter a cemetery was along a sunken narrow straight path, and then when people entered the special place it opened up in front of them. It might have emulated the birthing process, or emergence into the otherworld.

The formation and use of these sunken entryways date from 500 BC to AD 1300 in the Arenal area. After AD 500, and especially after AD 1000, a series of more complex societies developed to the east of the Arenal area. Along with inherited inequality came the "mentality of monumentality" and chiefs chose to impress their commoners and visitors with large constructed entryways into their special places. I suggest that the monumental entryways of the later chiefdoms had their origins in the earlier inadvertent sunken entryways to cemeteries of simpler societies. What became a cultural standard with no construction effort in simpler times, as people constructed the meaning of special places and how to enter them, apparently was "writ large" into a constructed monumentality in later times. The unanticipated results of repeated activities eventually became impressive indeed.

And what a wise choice by a chief seeking monumentality, to seize on a long-valued concept of sunken entry, to legitimize their centralized authority embedded in antiquity. The regularly repeated movements embedded meaning in the landscape that was later co-opted by leaders in need of monumentality to control behaviors of construction, maintenance, and use.

<A> The Arenal Research Project

The Arenal Research Project has been operating in northwestern Costa Rica since the early 1980s (summarized in Sheets and McKee 1994). Funding from the National Science Foundation, National Geographic, and the University of Colorado has supported research. NASA has provided abundant remotely sensed imagery from aircraft and satellite platforms, in both analog and digital formats (McKee et al. 1994). **<fig. 8.1 near here>**

Certainly the most surprising, and most important, research result is the realization that we can detect ancient footpaths in the remote sensing imagery, and we can confirm them by excavations and careful attention to stratigraphy (Sheets and Sever 1991). Most linear anomalies can be identified as recent or modern features such as roads, fencelines, property boundaries, or trails, by inspection of the imagery and by verification on the

ground. However, many have proved on excavation to be ancient paths eroded and entrenched by centuries of use. One of the greatest of the Precolumbian eruptions deposited a thick tephra deposit over the landscape at about AD 1450, thus providing a useful separator for ancient or historic features. For a feature to be considered Precolumbian the stratigraphic evidence must indicate it formed prior to (below) that eruptive deposit.

Because the relationship I propose here is a diachronic one, I will organize the body of this paper chronologically. Movement throughout most of the time of human occupation left no detectable trace, but that certainly was different for almost two millennia. The separation of cemetery from village, and the single-file procession between them along precise routes, resulted in entrenchment of paths. Centuries later, chiefs in search of monumentality wisely chose projects that manufactured immense versions of sanctified features from egalitarian times. Chiefs exploited the long-hallowed imbued meaning of the sunken entryways into massive projects that in their construction, maintenance, and use reproduced that meaning "writ large" into the landscape.

****Early Occupations, and Task-oriented movement in the landscape

Deleted: We also can determine if the linear anomaly formed after the Spanish conquest, and if so, we usually can determine its cause, be it an ox-cart road or other relatively recent feature.

We have not detected any preserved footpaths from our earliest time spans, from PaleoIndian through Archaic and the early sedentary (Tronadora phase) occupations. That covers the majority of time that we have documented people living in the area, from approximately 10,000 to 500 BC. It is apparent that the cultural prescription that certain kinds of travel needed to be along the same path had yet to develop during these occupations. My assumption is that task-oriented travel predominated, wherein people perceiving a need to obtain a food or other resource, visit kin, or conduct a ritual, generally would travel least-cost routes on an individual task basis, therefore sufficiently randomizing foot travel across their countryside so that entrenched paths did not develop. In fact, it is indeed fortunate that every footprint of people moving across the landscape does not preserve, or there would be very few of us able to live in a thoroughly trampled world.

Tronadora phase (c. 2000-500 BC) villages were small, probably less than 100 people, in round houses with (presumably) thatch roofs. The ceramics were highly sophisticated, and were accompanied by basic and efficient chipped and ground stone tool assemblages. Manos and metates probably were used for grinding maize and other seeds, and both macrofossils and pollen indicate that some

gardening of domesticates was done. However, the bulk of the diet probably derived from wild species of trees, bushes, vines, and other plants, along with hunting and fishing. Burials were secondary, in small rectangular pits just outside the driplines of house roofs, and often accompanied by ceramic vessels. It is important to emphasize this close association of the deceased with the individual household in the Tronadora phase, because this changes so dramatically in the next phase. We have closely examined all analog and digital remote sensing imagery in and around these villages, and found no linear anomalies that could be ancient footpaths. In terms of social organization, all material indicators consistently point toward egalitarian societies throughout the thousands of years from PaleoIndian through Tronadora times.

****The Arenal Phase and the Emergence of Ritually Directed Movement

The population density during all Precolumbian phases of occupation of the Arenal area remained quite low by Mesoamerican, Andean, and even by overall Costa Rican standards. It probably never exceeded a few people per square kilometer. However, the Arenal phase (500 BC to AD 600) had the largest settlements and the highest regional population density of any phase in our research area.

Villages are composed of houses similar in size and construction to the earlier phase, but many more of them, with more ceramics and heavy tools such as manos and metates. Instead of burying the dead adjacent to each household, villages created separate cemeteries, in some cases only a few hundred meters away, but usually many kilometers distant.

In terms of social organization, societies during all phases of occupation prior to the Arenal phase were egalitarian, based on the uniformity of housing, artifacts, and grave goods in the Tronadora phase as well as evident uniformity in the two earlier phases. Housing and household artifacts do not show any differentiation during the Arenal phase, supporting the interpretation that egalitarian societies continued. However, some Arenal phase cemeteries show internal differentiation that could reflect status differences, but it also could derive from gender or age differences and thus have remained egalitarian.

A good example of an Arenal phase cemetery is the Bolivar site (Hoopes and Chenault 1994). The burials at the very top of the hill had more formal rock coverings and more feasting evidence and a lot more broken pots and metates than did the burials just downslope (Hoopes and

Chenault 1994). If these differences are not reflective of variation in gender, age-grade, or other similar factors, they could be indicative of the beginnings of social inequality. The lack of skeletal preservation in all Arenal phase cemeteries is due to high soil acidity and mean precipitation of about 3000 mm per year. Unfortunately, that means no gender or age studies of the deceased can be performed. The habitation area was approximately 150 meters down slope to the northwest of the cemetery.

Although we detected no remains of a path at Bolivar, the cemetery itself is instructive as to burial procedures and post-interment rituals (Hoopes and Chenault 1994). The ridge-top cemetery received considerable post-interment attention. The primary burials were placed in pits dug about a meter below the ground surface, and occasionally accompanied with grave goods (stone axes). The pits were filled in with dirt and then outlined with elongated stones on the surface, and then rounded river stones were harshly smashed onto the entire surface, creating a low mound of rock. That was followed by extensive feasting and smashing of hundreds of complete pottery vessels and dozens of decorated metates and other artifacts in post-funerary rituals throughout the cemetery. Clearly this was the

Deleted: pre-and

most prestigious area of the cemetery. Only ten meters down the gentle slope was a different kind of cemetery, covered with much more fragmentary and eroded sherds and a few broken ground stone artifacts. We concluded that these artifacts were scavenged from a midden, and redeposited over the burials, a "poor person's" imitation of the more elaborate cemetery nearby. <Fig.8.2>

A few paths dating to the Arenal phase have been recorded elsewhere in our Arenal research area. The shortest known path (Fig. 8.2) is only 250 meters long, and its positioning helped us understand how important entrenched paths were to ancient people in this area. It is between a cemetery (G-184) and a village (G-180) that are 1.1 km apart (McKee, Sever, and Sheets 1994:144-146). The easiest transit between the village and cemetery would be on the flat floodplain of the Rio Piedra, along an almost straight line. However, they routed their path up the hill, over the top, and down the other side, and thus the first stage in the path process must have been culturally prescribed single file procession. That eventually developed into an entrenched path. By choosing the route up and over the hill they increased the distance of travel slightly, and the effort significantly. Traveling from the cemetery, one would be in the entrenched

Deleted: along the flat floodplain of the Rio Piedra.

Deleted: later

path up and down the hill, but as one reached the bottom of the hill and the entrenched path disappears, the village would open up to view. Wherever we suspect we have detected an ancient path in the imagery or on the ground, we excavate it to determine its age and nature. On the north side of the hill, the path had eroded down to about 1.5 m below the surrounding ground surface, while other parts of the trench on both sides of the hill had eroded deeper, to an estimated 2 m below the surrounding ground surfaces.

Deleted: At Trench 37

Deleted: down

Deleted: deep

Deleted: <Fig. 8.2 near here>

Such an entrenched path would only have formed under particular conditions, one, being movement restricted to that specific route. In the Arenal case, the cultural/ritual prescription of travel along precisely the same path, year after year, from village to cemetery and back, would have generated these conditions. The first effect of sustained path use was linear compression, and inclinations greater than 5°, and especially over 10°, provided sufficient slope for moving water to erode the path itself. The actual walked path surface is consistently (both phases, throughout the research area) only about ½ meter wide, and that can only be formed by single-file use. Because the tephra layers and the juvenile soils on them are so unconsolidated in the Arenal area, their angle of repose

Deleted: the first

Deleted:

under these conditions is a slope on either side of the path of approximately 30° from horizontal. Thus, as the path surface erodes downward, it takes a broad "V" shape of surrounding surface down with it. Centuries of use often result in the path entrenching to two, three, or more meters below the landscape due to the high rate of erosion of these unconsolidated sediments on slopes. Thus the prescription on path use in sloping areas resulted in the inadvertent entrenchment, which I believe became a cultural standard of the proper way to traverse between special places.

Although none of the paths of the Arenal phase were themselves constructed, associated features do exist. On the hilltop above Rio Piedra two low stone platforms flanking the path were built of subrounded river cobbles, presumably carried from the river nearby. It is possible that people with special ceremonial roles stood on the platforms as processions passed single-file between them. These features may be pregnant with importance, as they may be the forerunners to elements of monumentality in later chiefdoms (see below). The smashed ceramic vessels found on top of, and between, the stones are reminiscent of ritual pottery breaking in Arenal phase cemeteries on both sides of the divide.

Deleted: It should be noted that at the time of discovery, we thought the stone features might have been for small secondary burials (McKee, Sever, and Sheets 1994), but we found no direct evidence of any burials, and that now seems less likely.

Deleted: However, t

Deleted: , exemplified by Bolivar and Poma, a cemetery we excavated recently. Hence they may be related to the ritual artifact breaking at the cemetery at this intermediate high point at the two platforms.

The longest Arenal phase path discovered to date is over ten kilometers long, leading south from village site G-156 on the south shore of Lake Arenal, and running across the grain of the land with little regard for terrain (Fig. 8-1). Ultimately it bends westward, crossing the mountain range that divides the Caribbean from the Pacific drainage. Abundant ceramics indicate the G-156 village was occupied during the Arenal phase (Hoopes 1994). The path is also dated to the Arenal phase by stratigraphic associations of the soil on the volcanic ash unit when path use began, and the ash unit that fell after the path was abandoned. The path has been traced and confirmed to where it crossed the Rio Santa Rosa one km east of Tilaran, at the left side of Figure 8-3, and 6.4 km from the village (straight line distance). That segment of the path was confirmed by excavating Trenches 21 and 28. What appears to be a section of the same path, but farther west, was recently discovered at the juncture of the fincas ("ranches") of Callan Vargas and Hilma Jenkins, 8.8 km from the village in a straight line. Finding that segment led our survey into what must have been a very special area of some two dozen Arenal phase cemeteries one to two kilometers farther west, at the locus labeled "Mandela" on Figure 8-1, thus corroborating our contention that entrenched paths connect villages and

Deleted: record

Deleted: ions between

cemeteries. That entrenched footpaths formed only during the Arenal and Silencio phases, and not before or after, brings up two key questions, for which I can offer only possible answers. <Fig. 8.3, near here>

Deleted: during two

Deleted: s

Deleted: , 8.4, 8.5

Cemeteries Separated from Villages

Why separate village from cemetery? A potential answer is provided by ethnographic accounts in lower Central America. First we consider the present day Cuna in Panama (Dillon 1984), the most traditional Native Americans in lower Central America. The Cuna bury their most prominent village members (civic leaders, heads of prominent households, shamans, curers) in cemeteries at or near ridge tops visible from the village but many kilometers away. When asked why the cemetery is so far away, the Cuna respond that the spirits of the dead are less bothered by the noise, smoke, and children of the busy village, and the living are happier with the spirits of the formerly powerful people buried at a distance. The body of a powerful person may have stopped functioning, but their spirit has not and it must be dealt with appropriately. As the Cuna travel from village to cemetery and visit the graves of deceased ancestors for extended times, they consume food and drink, burn incense, and make offerings to the deceased.

The most traditional Native Americans in Costa Rica are the Bribri, described by Skinner (1920) and Bozzoli de Wille (1975). The Bribri believe that people leave a part of themselves in everything they touch, or in every place to which they have traveled (Bozzoli de Wille 1975). Both ethnographers mention the Bribri concern for evil spirits at the time of death. After death, the soul-spirit of the deceased will revisit all those places, and to find those places the assistance of the living is essential (Bozzoli de Willie 1975). She (1975:95) describes an example of a cemetery on a hilltop 2 km from the village and the processions carrying the bones (presumably from the platform) to the cemetery. The spirit, following the bone and the procession, needs guidance. The women tie string along the path to help guide the spirit, which of course causes a path segment to follow a straight line. If similar practices existed in ancient times in the Arenal area, this could explain why so many of our path segments are so straight. Elaborate funerary rituals occurred from the time of death to the interment.

▼▼▼

Why travel such a precisely prescribed route? James Snead (2002) provided important insights that could help answer this question in his study of ancestral Pueblo

Deleted: Skinner (1920: 95-102)) describes Bribri activities and beliefs regarding death in considerable detail. When an individual is near death, they are removed from their house and taken to a temporary hut away from the village. If a Bribri dies in their house it must be burned to destroy the influences of evil spirits. Only a trained "oko" can handle the body. The "oko" wraps the body and takes it to a platform in the forest. The "Apagando el Fuego" ("Quenching the Fire... [1]

Deleted: The leader of the ceremony makes a fire with a hand fire-drill, blesses articles of the deceased that still remain, sings secret songs, and then extinguishes the fire to reassure the surviving relatives of the deceased. ¶ The body remains on the platform in the forest for five years, during which it become defleshed (Skinner 1920:97-102). After those five years a "Baile de los Huesos" ("Bone Dance") is held. The ceremony lasts from 15 to 22 days, and involves prodigious... [2]

Deleted: Bozzoli de Wille (1975:95) describes an example of a cemetery on a hilltop 2 km from the village and the processions carrying the bones (presumably from the platform) to the cemetery. The spirit, following the bone and the procession, needs guidance. The women tie string along the path to help guide the spirit, thus causing a path segment to follow a straight line. A special funeral fire is burned for nine days, and then extinguished with cacao (Skinner 1920). After the f... [3]

trails of northern New Mexico. He found that meaning as well as practical and economic factors were intrinsic to ancient paths in the Bandelier area. In a paradigm-changing insight into how differently Westerners and Native Americans can view a trail, Snead (2002:756) provides a quote from Waterman about the Yurok of California: "Trails are sentient, and must be traveled with urbanity. If you step out of a trail and in again, and fail to preserve decorum, the trail becomes resentful." Although the geographic and cultural distances between Arenal people and the Yurok are great, I believe the former might have considered their paths as sentient, or at least so special that people did not step out of the path. Pertinent here is the concept of materialization (De Marrais et al. 1996), also presented in James Snead's chapter. Materialization focuses on the relationship between material culture and ideology, within the framework of landscape. It relates the physical to the conceptual world. As the generations of Arenal villagers processed single-file along the same ritual pathways to their cemeteries, their perception of the gradually entrenching paths changed, as did their perception of the landscape. The separation of village and cemetery appears suddenly in the archaeological record. Simultaneously, people determinedly maintained their

precise paths linking village to cemetery, thus enforcing connections between the living and the deceased. As those paths entrenched during later centuries, a new value emerged, that of the ideal way to transit the landscape and enter a special place. Generations of processions of Arenal people along their paths constructed meaning.

Deleted: This special sense of a trail, that channeled transit within a learned social memory, is what evidently developed in ancient Costa Rica.

It is clear that people began traveling along exactly the same path between village and cemetery, generation after generation, during the Arenal phase. What is less clear is why. The separation of village and cemetery occurs during the same phase as do the incised paths connecting them, so the answer probably lies in the culturally regularized transit between these special places. It is possible that the belief in the supernatural power of the spirits of the deceased had somehow increased around 500 B.C., and therefore separation of village and

Deleted:

Deleted: I believe there must have been two key initial elements, at about 500 BC, which eventually led to the development of the entrenched entryway physical and ideational complex. One is the separation of village from cemetery, and for that we have direct archaeological evidence. The other must have been the cultural prescription of traveling the same precise route between them. For this we do not have direct evidence of the concept at its inception, but we do find the result of it after generations of prescribed use. I suggest that the early generations of prescribed use resulted in some entrenching, but it was not until the entrenching became prominent, deeper than a meter, that the significance of deep, tunnel-like approaches to special places began to form. ¶

cemetery was necessary, as well as prescribed passage between them. Single-file processions were, involved, and a sense of place, as well as the tradition of going to the cemetery precisely as ones' parents and grandparents did.

Deleted: was increasing,

Deleted: may have been

The Silencio Phase and Continuity in Ritually Directed Movement

Deleted: When people trod the same path on slopes over 10°, the channel formed by many footsteps began to erode. Generation after generation of path use resulted in entrenchment of the paths one, two, three, or more meters below the surrounding ground surface. ¶

During the subsequent Silencio phase (AD 600-1300) the tradition of separating village from cemetery continued, as

well as the cultural prescription of following the same path between them, resulting in entrenchment. Although there is considerable continuity between the two phases, there were cultural and demographic changes that were significant.

Deleted: the same kind of

The research area witnessed an overall population decline in the Silencio phase, as well as a diminution in larger village sites (Sheets and McKee 1994). Cemeteries continued to be well separated from villages. The principal change in funerary practice from Arenal to Silencio phases involves the shift from rounded river rocks to flat slabs of rock (called "laja") used to make stone box tombs.

A good example is provided by the Silencio cemetery (G-150) perched atop the divide between Atlantic and Pacific drainages (Fig. 8-1). Evidence of feasting and other ritual activities associated with the deceased and their spirits in the cemetery included great numbers of thermally fractured stones used in cooking, many cooking vessels, dispersed maize pollen possibly indicating corn grown in the cemetery, carbonized foodstuffs, and pine pollen (Sheets 1994). The cemetery was connected to a village (or villages) and to exploited resources by paths

that headed downslope into both drainages, to the east and west.

<Fig. 8.6 near here>

The path headed westward from the Silencio cemetery has been traced for 3.7 km (straight-line distance) to near Tilaran where it disappears in relatively flat-lying terrain that has had major agricultural disturbance (particularly sugar cane) and a lot of recent construction. However, the Cerro Tovar laja source (Fig. 8-1) has been petrographically and chemically confirmed as the principal source of stone slabs and headstones for the Silencio cemetery, and the westward Silencio phase path heads straight toward it. The straight-line distance from the Tovar source to the cemetery is 7.3 km. Other confirmation that a major reason for the westward path was for the laja is provided by the two laja repositories that lie along the path (G-151 and -152) on the west side of the cemetery (Fig. 8-1).

Because the amount of trail use is proportional to the amount of erosion (holding slope constant), one can investigate relative amounts of foot traffic on portions of these Silencio phase paths. The volume of erosion of the path headed westward from the cemetery is about as great as

Deleted: Three prominent and deeply eroded paths head south to the spring that provided water for drinking, cooking, and other feasting activities in the cemetery. (Luis Jimenez, the property owner, said he knew the spring was reliable for the past 60 years, and was glad to hear its range of reliability now extended over a millennium.) If we compare the volume of erosion that occurred with these paths with the volume of erosion on paths farther from the cemetery, keeping slope constant, we can estimate that more than twice the traffic on the eastern path was going up and down between cemetery and spring. This path has been traced, and confirmed by excavations, 2.2 km eastward from the cemetery, in a straight-line distance. The end point(s) of that eastward trending path have not been found, in spite of many seasons of effort with remote sensing and pedestrian survey.

Deleted: Evidence of feasting and other ritual activities directed toward the deceased (and probably their spirits) in the cemetery included striking numbers of thermally fractured stones used in cook... [4]

Deleted: in a

Deleted: apparently was

Deleted: ed

Deleted: , if not the major,

Deleted: .Recent inspection of the color infrared aerial photography divulged an intriguing linear feature along the path about midway between the Silencio cemetery and Tilaran, adjac... [5]

the erosion of the path headed eastward (Fig. 8-1). One function of the westward path was transporting stone for construction of tombs from the Tovar source southwest of Tilaran. However, the amount of erosion (i.e. foot traffic) on this path is considerably greater than that expected if it were used only for access to stone. Therefore, I believe it is probable that a village connected to the Silencio cemetery lies to the west of the Tovar source. Traffic on the eastward path can be divided into two segments: the section connecting the cemetery to the spring, and the continuation of it farther east. Well over twice the erosion, hence foot traffic, traversed the paths between cemetery and spring, that traversed the continuation eastward. People involved in funerary rituals frequently descended to the spring and returned, more often than they walked the distance from village to cemetery. It is virtually certain that a village, or villages, participating in cemetery rituals, lies at the terminus of this eastward path. We have yet to follow the path all the way to that terminus, despite years of trying.

Only during the Arenal and Silencio phases did people separate their villages from their deceased, and use the prescribed paths to link them. That ended in the last two centuries before the coming of the Spanish.

The Tilaran Phase

The Tilaran phase is the final Precolumbian phase in the Arenal area, dating from AD 1300 to 1500. The population decline of the earlier phase continued and even accelerated, leaving scattered hamlets across the countryside, and no evidence of cemeteries separated from villages. The settlement pattern is like that of the Tronadora phase, the earliest sedentary phase, but probably with even lower regional population. We could find no evidence of ancient footpaths, in spite of the fact that, due to their higher stratigraphic position, they would have been subject to less intervening natural and cultural disturbances than the older footpaths. It is thus probable that ritually prescribed travel had been eliminated from the culture. There was a significant cultural discontinuity from the preceding tradition, as the local cultural traditions were replaced by a Central Highlands-Atlantic Watershed culture (Sheets 1994). An actual immigration and population replacement may have taken place.

<A> And Then, the Mentality of Monumentality

At about AD 1000 a series of larger sites emerged to the east of the Arenal area, in the Atlantic drainage of Costa Rica. I would characterize them as ranked societies or

chiefdoms, with their central places distinguished by large bilaterally symmetrical architecture that exhibits monumentality. The sites often have long roadways paved with cobbles (called "calzadas") that lead into formal plazas ringed with barrier structures, large mounds, and occasionally aqueducts, pools, and bridges (Snarskis 1981:63). As Snarskis states, Guayabo de Turrialba is the largest and best known of these chiefly centers, which also include Las Mercedes, Anita Grande (a.k.a. Parasal), Fortuna, Cutris, Costa Rica Farm, and La Cabaña.

In all cases the entryway into the special place is constructed to be impressive, making monumental what was an unintended consequence in the Arenal area. But the relationship with the Arenal area is unclear. A population movement from Arenal eastward to these sites is possible, but there is no evidence of it. It is also possible that rulers in the more complex societies adopted the idea from the Arenal area. Perhaps more likely is a widespread religious conversion involving all these areas, resulting in establishing distant cemeteries and paths that entrenched through time. No earlier simple eroded paths have yet been found east of the Arenal area, that would support this interpretation. A ruler initiating control of labor to construct, maintain, and use monumental entryways

would be wise to exploit a valued cultural norm that had existed for centuries before, rather than inventing something entirely new.

One approaches the Guayabo de Turrialba site via a 20 meter wide and straight calzada that passes between two imposing stone structures or "guardtowers" (Fonseca 1981:106). However, as I looked on either side of the

"guardtowers" I could find no natural or constructed feature that might hinder someone circumventing this

entrance. The calzada continues toward the site center.

The calzada and principal mound are precisely oriented on Turrialba volcano in the distance, as viewed from the calzada between the "guard towers." I suspect the

intended effect was to create the impression of

monumentality and to display chiefly power to those walking

the calzada, and make a statement of authority and connectivity or rulership. <Fig. 8.5, near here>

According to Mauricio Murillo (2002) a long stone-paved calzada has been traced and confirmed heading north northeast out of Guayabo for over 4 km, linking it with other sites on the way and a site complex at its northern end (Figure 8.8). The road ignores a tremendous amount of topographic variability in order to maintain an almost straight line. The general pattern at Guayabo is a long,

Deleted: At Guayabo de Turrialba

Deleted: o

Deleted: or natural

Deleted: s

straight, and relatively narrow calzada leading from distant settlements to the site, widening to a much wider formal paved entryway passing between large stone platforms, and leading the visitor into the formal site center.

Fortuna and Cutris are the centers of chiefdoms located in a topographic setting quite different from Guayabo, as they are beyond the steep rocky terrain of the volcanic slopes. Unlike Guayabo, they lacked easy access to large construction stone, as they are in a gently sloping alluvial environment of finer sediments. Instead, their impressive entryways are earthen constructions.

Large labor gangs created these entryways by digging a few meters down into the fine river alluvium and piling the sediment up on both sides, creating a sunken long road with long straight berms on both sides. Recent research on

Cutris is reported by Vazquez, Guerrero, and Sanchez (2003). One surprise is that Cutris is earlier than expected. Other chiefdoms in Costa Rica have been dated to Period VI, between AD 1000 and 1500. Cutris reached its apex during Period V, between AD 500 and 1000. The 50-hectare site center is much like the later chiefdoms, with some 86 identified features, largely platforms and mounds (Fig. 8-6). At least some have river stone used in facing

Deleted: I can trace the broad and deep entryways on airphotos of Cutris for 3.7 km to the northeast and 3.8 km to the northwest of the site. These entryways were created by large labor gangs digging a few meters down into the fine river alluvium and piling the sediment up on both sides, creating a sunken long road with long straight berms on both sides

Deleted: According to Juan Vicente Guerrero (personal communication 2003) small stone platforms were built along either side of the entryway close to the site center, atop the berms, every few hundred meters. It is possible that the stone platforms beside the naturally eroded path atop the hill near Rio Piedra might have been an egalitarian forerunner to these stone platforms flanking the broad, deep entryway? During the final kilometer of approach to the site center, the entrenched roadway widens and deepens dramatically. The original depth is unknown, but I would estimate it was four or more meters below the original ground surface, and the berms only serve to further emphasize its depth. . In a barely sloping tropical rainforest environment, with over 3000 mm of mean annual precipitation, the management of water must have posed a major challenge in times of heavy rain. It is still an impressive experience to walk down the deep broad entryway, seeing nothing of the ... [6]

Deleted: , adding reliable details to my impressionistic observations mentioned above

and stairways. Illicit excavators have found both gold ornaments and carved jade.

Deleted: e, and those would make more sense with the new dating

The monumental sunken roadways radiating from Cutris are impressive indeed. Vazquez et al. (2003) have found that each terminates in a smaller village, from 6.7 to 9.4 km from Cutris. The roadways are all of earthen

Deleted: They have traced them farther than I could on the airphotos.

construction, and are visible in aerial photography (Fig. 8-7). The roadways average 6m in width, and they broaden dramatically in the final kilometer approaching the site center. They broaden to 35 to 40 meters in width, and are deeper than before, perhaps some 5 meters below the surrounding ground surface. The effect of walking a long sunken roadway is still an emotional one, as along its length one is even today sufficiently deep to not see the surrounding countryside, and one's attention is focused on the distant objective straight ahead. Anticipation builds as one walks in the progressively deeper and wider entryway, and then as one enters, the full site center is suddenly in view. If the present visitor can have such an emotional reaction, and be so removed from the ancient inhabitants by a millennium, by culture, by language, and by belief, one can only imagine the effect on the traveler who is fully informed and experiences the entrance process from within the relevant cultural context.

According to Juan Vicente Guerrero (personal communication 2003) small stone platforms were built along either side of the entryway close to the site center, atop the berms, every few hundred meters. It is possible that the stone platforms beside the naturally eroded path atop the hill near Rio Piedra might have been an egalitarian forerunner to these stone platforms flanking the broad, deep entryway?

Two sets of ring roads connect three of the radial entryways at Cutris (Fig. 8-6), and are 2-3 meters wide (Vazquez et al. 2003) and about that deep. These secondary roads could have provided access to other major roads without entering the site center. Perhaps not all processional participants were allowed entry to the site center. Why the southern secondary road follows a zig-zag route is totally unknown.

Broad entrenched entryways radiating some 4 km from a site make no sense as defensive features. I think the most likely functional explanation is in the ritual domain, as processionways, in monumentality, and materialization (De Marrais et al. 1996). These roadways can readily be interpreted as chiefly displays, demonstrating their control of energy through human labor to construct and maintain these huge systems that shape perception of space

to advance political and social agendas. These efforts are conspicuous consumption in a non-practical domain. Chiefs could display their control of human activity in the processions using the entryways, another way to demonstrate hierarchical power before their subjects and before visitors from other centers.

<A> Comparison with Other Path or Road Networks

The pattern seen in Costa Rica of central places connected by calzadas, with "ring roads," is also known in other areas of the tropical lowlands in South America. They also have some similarities with constructed roadways in ancient North America. These patterns reflect common expressions monumentality and processions/pilgrimages.

Heckenberger et al. (2003) report on complex regional settlement patterns of native Amazonians in the Xingu area of Brazil from c. 1200 to 1600 AD. They found 19 major ancient settlements an average of 4 km apart, and they were linked with broad straight roads detectable in Landsat TM imagery. Some of the excavated ditches in and around the settlements were up to 2.5 km long and 5m deep, looking very much like the "ring roads" around Cutris. The major roads were 10 to 50 m wide, with berms on each side, and often ran into plazas. The pattern of a central place with

radiating principal entrenched roads, with smaller concentric rings of ditches, is strikingly similar to Cutris. The rings could have functioned as roads linking the radiating primary roads, or some of them could have been part of ditch-and-palisade fortifications. The radiating roads must have served practical functions for communication and trade, but their width as they approach the site centers indicate more of a ritual/processional function. To some degree this widening could have practical aspects, as Ur (this volume) found. However, I believe the degree of widening at Xingu and the Costa Rican chiefdoms is much greater than the rather small populations would warrant for purely practical purposes. Heckenberger et al. (2003) estimate residential populations in the larger centers as between 2500 and 5000 people, or regionally at 6 to 12.5 people per km².

Similar patterns can be seen in lowland Venezuelan sites associated with chiefdoms, which developed earlier than most of those in Costa Rica and the Amazon (Spencer 1994: 38). Between AD 500 and 1000 calzadas came into use, linking several of these centers. The settlement pattern, density, radiating calzadas and ring roads, and central places are quite similar to Atlantic lowland Costa Rica. Large and small mounds and an oval "ring road"

Deleted: The Gavan site, for instance, is characterized by large and small mounds and an oval "ring road" very similar to Cutris

very similar to Cutris, for instance, characterize the Gavan site. Three calzadas radiate toward other sites as well (Spencer 1994).

In Ohio the "Great Hopewell road" (Lepper 1995) has been traced for some 90 km as a straight entrenched roadway from the Newark earthworks south-southwest to the High Banks works in Chillicothe. The width of the roadway is impressive at about 200 feet (60 m), a bit wider than the Cutris entryways. The earthworks at both ends are huge enclosures that are somewhat reminiscent of the plazas in the large Costa Rican sites.

Although they are in a dramatically different arid landscape, the Chaco roadways in the US Southwest (Lekson 1999, Sever and Wagner 1991) also share characteristics with the roadways at Cutris and other chiefdoms.

All of these constructed cases share roadways that become more formal and wider as they get closer to "downtown." Although they were never historically connected, their commonalities show intriguingly similar materialization (DeMarrais et al 1996) as sustained use embedded ideology. They have berms, and they are determinedly straight in spite of topographic obstacles. The roadway entrances are much wider than can be explained by economic needs, and the quote that begins this chapter

Deleted:

on labor control and monumentality is pertinent. Snead (2002, and this volume) develops the concept of a "gateway trail" among the ancestral Puebloans, which shares important features with many of these built entryways, but without the monumentality.

<A>Summary, Conclusions

Peoples living in the Arenal area of Costa Rica, documented by our research, are notable for social stability and continuity throughout the 10,000 + years of Precolumbian occupation. Residents avoided the population explosions of Mesoamerica and the Andes, and they avoided state level societies with their concomitant chronic warfare, environmental degradation, reliance on intensive cultivation of a carbohydrate staple crop, nutritional deficiencies, and other hallmarks of "civilization."

Human movement across the landscape throughout 80% of the Precolumbian occupation was sufficiently randomized to leave no trace that we can detect by remote sensing, pedestrian survey, or excavation. That movement is here interpreted as task-specific, and thus was not routinized in place for long periods of time. However, this pattern changed at about 500 BC, and for almost two millennia people separated their cemeteries from their villages.

They traveled in single file between them on straight circumscribed routes. Regular processional use of the path must have invested it with increasing meaning and sanctity.

Use of the same precise path resulted in linear compaction. Where the path traversed a slope, an unintended consequence was erosion. Although the actual path surface was never wider than a half meter, the downward-eroding path eroded its sides as well. Use sustained over a few centuries resulted in paths entrenched a few meters below the surrounding terrain. A person traveling an entrenched path loses sight of surrounding terrain, and vision is inevitably focused on the objective at the end of the path. I suspect the deep "meaning" of the path became associated with travel through such a deep entrenchment, which opens up when one enters the special place at the terminus. That inadvertent consequence permanently engraved procession routes into the landscape, and into social memory.

Deleted:

I propose that in later centuries, when chiefdoms developed to the east of the Arenal area, and chiefs needed to exercise their authority by mobilizing labor to make large nonutilitarian features, they adopted the symbolism of entrenched entryways for their monumental architecture. Thus they built features such as the c. 8 km long entrenched

earthen roads at Cutris, and later the long paved calzadas with monumental entryways into sites such as Guayabo de Turrialba. Thus, the egalitarian societies developed the principles that were "writ large" when the mentality of monumentality developed among more complex societies.

The religious conversion in the Arenal area about 2500 years ago resulted in the placement of the deceased in cemeteries at a distance from villages. The ritual processionways compacted and began to entrench. After a few generations the paths were deep enough to restrict views of the countryside and focus attention on the objective. Thus, materialization (De Marrais et al. 1996) integrates material culture, natural processes, and ideology. When leaders of nearby chiefdoms needed a "hook" to get commoners to engage in large work gangs to construct monumental features, they wisely chose sunken pathways that had already achieved a high cultural value centuries earlier.

<A>Acknowledgements

Without the assistance of Tom Sever (NASA) the Arenal project would have been traditional, short-lived, and focused on chronology, settlement patterns, and the effects of explosive volcanic eruptions. Tom opened the door of

remote sensing and thus had the unanticipated consequence
of the footpath discoveries, fundamentally enriching, our
research. All hyperboles are warranted.

Deleted: and thus

Deleted: ed

I thank Juan Vicente Guerrero for taking the Arenal project members to the big chiefdom sites of Fortuna, Cutris, and Parasal during the 2003 field season. It was during that trip that the little "light bulb" finally ignited and I perceived a possible relationship between the inadvertent erosional paths in the Arenal area and the monumental entryways in the big sites. I greatly appreciate the invitation by James Snead and Andrew Darling to join their inaugural Penn Museum International Research Conference Seminar, and the resultant volume, on this under-researched topic. I am deeply indebted to the comments on an earlier version of this chapter by my esteemed colleagues at the seminar, as they have helped my thinking on the topic, and hopefully improved this final written version. Jason Ur was particularly helpful.

I greatly appreciate the support for this field research provided by the National Science Foundation, National Geographic, and the University of Colorado. The dedication of many field crews has been impressive, second only to their determination to get to the beach on weekends. I am deeply appreciative of my CU

archaeological colleagues' comments on an earlier draft of this chapter, especially Art Joyce and Cathy Cameron.

James Snead gave an earlier draft a careful reading, and his suggestions have greatly improved many a convoluted

expression. An anonymous reviewer was exceptionally helpful in pointing out redundancies and unclear sections.

All errors of omission or commission are mine.

Please note:

I have agreed to reduce the number of figures. I had 10, but can reduce them down to 7 and still illustrate my chapter pretty well. I will do new captions, and will reverse the order of two figures. I don't think you need figure captions at this point, but will provide them now or whenever you wish.

Skinner (1920: 95-102)) describes Bribri activities and beliefs regarding death in considerable detail. When an individual is near death, they are removed from their house and taken to a temporary hut away from the village. If a Bribri dies in their house it must be burned to destroy the influences of evil spirits. Only a trained "oko" can handle the body. The "oko" wraps the body and takes it to a platform in the forest. The "Apagando el Fuego" ("Quenching the Fire") ceremony takes place nine days after death. The ceremony lasts one night, and includes feasting and consumption of chicha (maize beer) and cacao.

The leader of the ceremony makes a fire with a hand fire-drill, blesses articles of the deceased that still remain, sings secret songs, and then extinguishes the fire to reassure the surviving relatives of the deceased.

The body remains on the platform in the forest for five years, during which it become defleshed (Skinner 1920:97-102). After those five years a "Baile de los Huesos" ("Bone Dance") is held. The ceremony lasts from 15 to 22 days, and involves prodigious quantities of chicha, cacao, and food. The same "oko" who presided over the fire ceremony also leads these ceremonies. The

"oko" and assistants wrap the bones in a bark blanket and take them to the cemetery.

Page 216: [3] Deleted

Payson Sheets

06/05/2008 10:51:00

Bozzoli de Wille (1975:95) describes an example of a cemetery on a hilltop 2 km from the village and the processions carrying the bones (presumably from the platform) to the cemetery. The spirit, following the bone and the procession, needs guidance. The women tie string along the path to help guide the spirit, thus causing a path segment to follow a straight line. A special funeral fire is burned for nine days, and then extinguished with cacao (Skinner 1920). After the fire is extinguished, the bones finally were interred in the grave.

Page 220: [4] Deleted

Payson Sheets

07/05/2008 09:03:00

Evidence of feasting and other ritual activities directed toward the deceased (and probably their spirits) in the cemetery included striking numbers of thermally fractured stones used in cooking, cooking vessels, dispersed maize pollen perhaps indicating growing corn in the cemetery, carbonized foodstuffs, and other indications (Sheets 1994).

Page 220: [5] Deleted

Payson Sheets

07/05/2008 08:47:00

Recent inspection of the color infrared aerial photography divulged an intriguing linear feature along the path about midway between the Silencio cemetery and

Tilaran, adjacent to our Trench 17. The path had been confirmed by that trench, and the path characteristically was headed straight across the terrain instead of doing what people, cattle, and vehicles do now: contour to avoid steep slopes. The path at this locality heads straight downhill and then up the hill on the other side. In the CIR (color infrared) imagery is a faint line perpendicular to the main path that heads straight up to the top of a hill, and then no farther. We excavated two trenches that confirmed the anomaly as a footpath, same age as the main path, that we call Spur 1, and dated it to the same time span as the main path. We excavated numerous test pits at the end of the spur but failed to identify a resource or activity that could explain its purpose. The Silencio cemetery is visible from the hilltop but not visible for a long distance along the main path, so we suspect the spur was used by people wishing/needing to see the cemetery during their ritual treks. The erosion along the spur was a small fraction of the erosion along the main path, evidently less than $\frac{1}{4}$, so we infer that less than a quarter of the people who used the main path also used the spur. **<Fig. 8.7 near here>**

Of all Precolumbian phases, only the Arenal and Silencio phases were characterized by elaborate feasting and funerary ceremonialism together with discrete

villages and cemeteries linked by entrenched passageways. Ritually directed travel between village and cemetery mandated that people walk along the same precise route generation after generation. The social rules of ritually directed travel were learned and followed rigorously. An unintended consequence in the early part of the Arenal phase, when such travel was beginning, was the compaction of the path on slopes over about 10° that resulted in the channeling of surface runoff water on the path and the erosion of that path. As the path continued to erode, it began to affect the sediments on either side of the path. As the many trenches we have excavated along the paths have shown, the juvenile soils formed on the recent volcanic ash deposits from Arenal volcano are so unconsolidated and have such low clay content that they can maintain a slope no steeper than about 30° on either side of the path.

According to Juan Vicente Guerrero (personal communication 2003) small stone platforms were built along either side of the entryway close to the site center, atop the berms, every few hundred meters. It is possible that the stone platforms beside the naturally eroded path atop the hill near Rio Piedra might have been an egalitarian forerunner to these stone platforms flanking the broad, deep entryway? During the final

kilometer of approach to the site center, the entrenched roadway widens and deepens dramatically. The original depth is unknown, but I would estimate it was four or more meters below the original ground surface, and the berms only serve to further emphasize its depth. . In a barely sloping tropical rainforest environment, with over 3000 mm of mean annual precipitation, the management of water must have posed a major challenge in times of heavy rain. It is still an impressive experience to walk down the deep broad entryway, seeing nothing of the surrounding countryside, and then entering the site center and seeing it open up to one's view **<Figs. 8.9 and 8.10 near here>**

Broad entrenched entryways radiating some 4 km from a site make no sense as defensive features. I think the most likely functional explanation is in the ritual domain, as processionways, and in monumentality. These roadways can readily be interpreted as chiefly displays, demonstrating their control of energy through human labor to construct and maintain these huge systems. These efforts are conspicuous consumption in a non-practical domain. Chiefs could display their control of human activity in the processions using the entryways, another way to demonstrate hierarchical power before their subjects and before visitors from other centers.

